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... VACUUM TUBE VOLTMETERS ...

By Alec H. Clyne. VK3VX

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PART 2 (Continued)

(b) The SLIDE-BACK V.T.V.M .. One of the cardinal rules of all laboratory procedure is that the measurement of an unknown quantity is often most conveniently and accurately accomplished by balancing it against a known variable quantity in such a way that inaccuracies in the measuring equipment may be as far as possible cancelled out.

Hence we have such instruments as the slide-wire potentiometer for measuring DC voltages and the Wheatstone Bridge for resistance and in a modified form for reactive impedances.

The Slide-back VTVM is really an electronic off-spring of the Slide-Wire Potentiometer, being an instrument in which measurement of an unknown voltage is made by balancing its effect on the grid of a vacuum tube against the effect on the same element of a known (or measurable) DC voltage. The Slide-Back VTVM is shown in its simplest form in Fig 4.

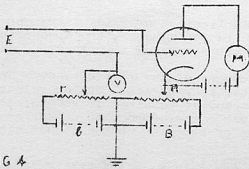


FIG 4

Neglecting voltmeter V and the associated resistor r and the battery b it will be readily seen that the instrument is a simple plate rectifier type except that instead of the usual cathode resistor bias a battery and potentiometer are used in the cathode circuit to provide the necessary bias.

In operation the resistor R is first adjusted to give a low reading on M when the

input terminals E are shorted, this reading, the "false zero" should be some low value, say .5m.a. The actual value is of no consequence, but it must always be the same value. R is then left set and plays no further part in the measuring procedure.

When a voltage is applied at E the plate current shown on M rises. Then by adjusting r the bias applied to the tube may be increased and the plate current brought back to the original level.

It is now obvious that the additional bias has an effect on the grid of the same magnitude but opposite to that of the applied voltage. Hence the voltmeter V, which reads the additional bias voltage, also gives an indication of the effect of the applied voltage E.

When E is DC then V reads its actual value. When E is AC the reading on V may indicate RMS, average or peak value according to the characteristics of the vacuum tube circuit. In the form shown V indicates average value. By connecting a condenser between cathode and earth it may be made peak reading.

A study of the circuit arrangement will suggest that V, r and b may be omitted and R used to adjust the balancing bias, and if R were to have a pointer moving over a calibrated scale then the final result could be read off from the scale. This is sometimes done to save the cost of the meter V (which incidentally should be a good one). However it is necessary when using this simplified arrangement to make two readings from the scale thus increasing visual errors by 100%. It is not possible to have a fixed zero since, due to battery deterioration, or variation in any other source of supply voltage, it is always necessary to set R to secure the desired initial reading on M before using the instrument.

The outstanding advantage of the Slide-back VTVM is that, being a comparison instrument it requires no calibration by the builder. This is taken care of by the manufacturer of the volt-meter V. Thus high accuracy is possible. Naturally only steady voltages may be measured; the instrument is capable of following moderately rapid variations but the operator never is.

Probably the most common application of this instrument is when a temporary set-up is required in a hurry, the absence of the necessity for a calibration then becomes important.

(c) D.C. AMPLIFIERS ... The accuracy of any type of Vacuum Tube Voltmeter is restricted at low values of applied voltage by the visual accuracy possible in reading the indicating device. It is desirable therefore when measuring very low voltages to have some means of stepping up the sensitivity of the whole instrument.

Some form of amplifier immediately suggests itself, and since it is only necessary to amplify DC it may be made very simple.

On this point there may be some misconception, therefore it is necessary to point out here and now that in referring to DC amplifiers, we mean DIRECT CURRENT AMPLIFIERS, which paradoxically enough we use to amplify a DC voltage. The term DC is also used in connection with amplifiers to mean Direct Coupled, but although we use a Direct Coupled Amplifier to amplify DC we refer to it as a DC Amplifier, not because of its circuit arrangement, but because of its application.

The above wordy explanation is occasioned by the contention in a certain local handbook that DC amplifiers are inclined to be inconsistent in performance, probably that is true of Direct Coupled Amplifiers used for sound reproduction, but they are quite suitable as DC Amplifiers for use with Vacuum Tube Voltmeters.

It will now be obvious that we propose to amplify the output from the rectifier, and it may be asked why not place the amplifier ahead of the rectifier. This is a possibility if the instrument is to be used on a fixed frequency, or on a narrow range of frequencies, but the problem of designing an amplifier to give constant amplification on all frequencies from DC to say 100 Mc/s is one that not even a Ham would attempt, even if it could be done.

It is also well to note that the addition of an amplifier is not the only solution, but it is probably the best Alternatives are to use a very sensitive meter of the usual type or to use a mirror galvanometer having a scale several feet long if desired, but both have obvious disadvantages.

Getting back to our DC amplifier, all that is necessary is to use the rectified output of the voltmeter tube to change the bias on a second tube, and then read the plate current variation in the latter to give the desired result.

The amplifier then boils down to the arrangement shown in Fig 5, where it is shown applied to the output from a Diode-Capacity VTVM to indicate how it may be used. In this case the voltage V applied to the DC amplifier is taken from across the condenser in series with the diode. With other types it may be taken from corresponding points, for instance across the plate resistor of grid rectifiers or

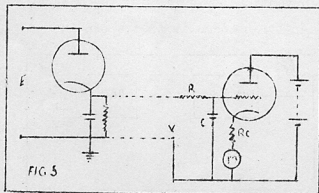


plate rectifiers. In the case of the reflex type it would, of course, be taken from the cathode resistor.

The resistor R and the condenser C are included in order to filter out stray AC, which might be rectified by the amplifier and cause error.

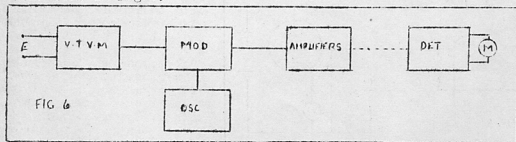
In the design of such an amplifier it is necessary to know the value of V which is to correspond to full scale reading on meter M. Assuming that the characteristics of the VTVM are known, as they should be, V may be calculated. In the arrangement shown V is equal to the peak value of E. In the case of say a plate rectifier VTVM the maximum value of V may be found by measuring the "full scale" plate current of the voltmeter tube and combining it via Ohms Law with the value of the plate resistor. By "full Scale" plate current we mean that which corresponds to the maximum value of E to be measured.

Having the maximum value of V it is now necessary to choose a suitable tube and set of operating conditions so that V max will produce full scale deflection on the meter M. This may be readily done with the aid of tube characteristic charts, it being simply a matter of finding a tube whose plate current will swing from say .2 m.a to full scale current of M, when the grid voltage is varied by an amount equal to V. This also gives the necessary initial grid bias and the value of plate voltage. R_c , the cathode resistor may then be roughly determined by calculation and finally adjusted to give the exact calibration desired.

As shown the amplifier has negative feedback, this is most desirable since it gives good linearity between input and output.

It is possible of course to use more than one stage of amplification, and provided that negative feedback is used good results may be obtained. A limit is reached when variations in the electron stream of the voltmeter tube cause serious fluctuations in the plate current of the final amplifier. This sets a limit to the ultimate sensitivity of conventional Vacuum Tube Voltmeters.

Another variation on the amplifier theme is that shown in block form in Fig 6.

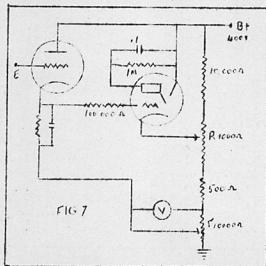


In this arrangement the output from the VTVM is fed to a modulator tube which also takes the output from the oscillator. The Modulator's AC output is then proportional to the DC output from

the VTVM and this may be amplified and detected, the output from the detector being read by a DC meter. Since the amplifiers operate on a fixed frequency they may have very high gain. Alternatively the output from the final amplifier may be fed to an antenna and radiated. This is the system used in some types of stratosphere balloons used for meteorological observations, and is really only a conventional transmitter modulated with DC instead of AC as in the case of speech transmission.

(d) MAGIC EYE INDICATORS ...The possibility of using a Magic Eye as an indicator in a Vacuum Tube Volt-meter is one which finds considerable favor among Hams. The Magic Eye when used properly is very suitable as an indicator, but if accuracy is desired, considerable care is necessary. By this is meant that the Magic Eye should be used only as an indicating device and not as a direct reading measuring device.

Bearing this point in mind it will be seen that the Magic Eye is very suited to use in place of the plate current meter in the Slide-back VTVM. A typical arrangement is shown in Fig 7.



The operational procedure is similar to that already described. First the input terminals are shorted and R is adjusted until the Eye is just closed. When voltage is applied at E the eye will flick open and it is necessary to adjust r until the Eye is once again just closed, when V is read off as before.

The Magic Eye is particularly useful in this application on account of its ability to take a heavy overload. Even this has its limits however, and the 100,000 ohm resistor is placed in series with the grid to limit the flow of grid current when the Eye is wide open.

The values shown in the circuit diagram are suitable when it is desired to measure voltages up to about 200 volts and may be varied to suit individual requirements. The resistor and condenser in the plate circuit of the magic Eye are shown with typical values for the 6E5 and will of course remain unchanged.

(e) BYPASSING... IN all the circuits shown in these articles bypass condensers have been omitted for the sake of simplicity.

With diode types bypass condensers are not necessary, but with other types it is necessary as a rule to bypass the plate with a small mica condenser, say .002 mmfd to eliminate stray RF introduced into the plate circuit through grid-plate and other stray capacities.

In most cases it is also necessary to bypass the meters and this is particularly so with the voltmeters used in the Slide-back VTVM's.

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The American War Production Board has made a call to all citizens who own property, or if they know of any other property, on which quartz crystals may be found. To be useful for radio purposes the quartz must grow in separate individual crystals, weighing at least half a pound, at least an inch thick and three inches long, colorless or light smoky. Crystals in clusters or masses are useless, as are the milky, rose and purple varieties... It is understood that a Melbourne firm have commenced mining for suitable crystal in Australia.

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Riveting inside small structures was impractical until the dynamite-filled heat detonated rivets were developed. The first detonator was a slow "soldering-iron" device, but today an electron "gun" allows one man or woman to "set" 20 to 40 rivets a minute! The electron riveter shoots high-frequency current into a rivet instantly raising the temperature of the powder to the detonating point.

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A new electronic device has been developed for testing four-engined bombers in flight. During flight the temperatures of all 72 cylinders, the changing temperature of the carburetors, exhaust and the oil in the fuel lines, and the pressures on the wing struts bulkheads and tail surfaces, are automatically recorded...
QST

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FOR SALE

The Victorian Division has a number of the Admiralty Handbook for sale. These are in brand new condition and are the 1938 two volume edition. Anyone wishing to purchase are advised to get in touch with the Secretary, Box 2611W. G.P.O. Melbourne.

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THE LUNAR PHOTOELECTRIC EFFECT ON RADIO WAVES

In the good old days many hams swore blind that DX was at its best on a clear moonlit night, while others were just as positive that the opposite was true. Perhaps the following notes which are taken from an article by O. Ferrell in "Radio", may shed some light (not moonshine) on the subject.

Recently Dr. Stetson announced his discovery of "moon rays" that positively affect E layer ionization, and a good correlation to DX-ing between 100 and 600 metres is now indicated. It is a simple fact that the light of the moon itself is too feeble to have any ionizing effect on the earth's upper atmosphere, and yet the fact that the ionization appears to depend upon the amount of the illuminated surface of the moon turned towards the earth has suggested some sort of photoelectric effect. Furthermore the fact that the effect is much more marked at sunspot maximum than minimum strongly suggests that the solar radiation falling upon the moon's surface is a primary factor.

It is not possible to be too dogmatic as to the nature of the bombardment from the moon, just as it is not wise to say what type of 'ray' causes the lunar surface to become radioactive. There appears to be a very wide choice of particles, including high velocity electrons, positrons, neutrons, deuterons, alpha particles and cosmic rays, not forgetting the greater numerical strength of the potentially weaker photon.

We can, however, assume that myriads of electrically charged particles arriving from the sun at the speed of light, strike the moon's surface and cause the probably raw element deposits there to become atomically excited emitting strong gamma rays or something akin to ultra-violet light whose high penetrating power affects the E region ionization.

It is pointed out that this is the result of several cycles of interlocking factors. The new moon rays are not detected at all times, but only at periods of sunspot activity and when the moon itself is approaching the optimum position in the heavens, i.e. if there should happen to be a particularly active sunspot group about two days before the full moon, the E layer ionization at night would rise notably. As the moon becomes full the lunar energy begins to decrease until two days before the last quarter, when it has its least effect.

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One of the newest developments in use by the U.S. Signal Corps in field communication is a four wire cable the size of a lead pencil. By means of carrier-current technique three telephone and four telegraph circuits may be handled simultaneously over a single cable, which are laid along the ground for distances up to 150 miles. Amplifiers are spaced along the way.....QST.

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- THAT HE WHO FIGHTS MAY READ -

A page of book reviews conducted for the benefit of
Hams in the Services, and others similarly situated.

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MICROWAVE TRANSMISSION, J. C. Slater. 310 pages 29/9.

Of American origin this is an advanced manual, dealing for the most part with the mathematics of wave guides, transmission lines and antennas for use in the centimetric wave portion of the spectrum.

FREQUENCY MODULATION...August Hund...375 pages...34/-

Also American. Maths of Frequency Modulation, with descriptions of Receivers Transmitters and Antennae. The Author of this work has allowed himself to be side-tracked into an old argument "is it Frequency Modulation, or Phase Modulation, or both or what..." Otherwise it appears to be very good, but needs a fair knowledge of advanced mathematics for a complete understanding.

In view of the fact that the two books reviewed above are of a highly specialised nature and rather mathematical we are appending this month a short list of some of the many other books available at present.

R.S.G.B. Handbook....Reviewed last month.... 8/3.

A.R.R.L. Handbook ...20th Edition...478 pages11/6

RADIO RECEIVING CIRCUITS HANDBOOK...Squire (Lond), 104 pages, 8/3.

OSCILLATOR AT WORK ... Rider (U.S.A.) .. 243 pages .. 20/-.

METER AT WORK ... Rider .. 152 pages .. 15/-

SERVICING BY SIGNAL TRACING .. Rider .. 360 pages .. 30/-

VACUUM TUBE VOLTMETERS .. Rider .. 179 pages .. 19/-

The prices shown here are the ruling retail prices in Melbourne and are subject to variation from time to time.

All books reviewed on this page are loaned for review by
McGills Newsagency, Elizabeth Street, Melbourne.

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It would be appreciated by the Editorial Staff if readers would drop a line expressing their opinion of this feature.

Alec H. Clyne

- Review Editor.

.. SLOUCH HATS & FORAGE CAPS ..

Believe it or not ... the yf went to a school concert t'other night and one of the items was called "Slouch Hats and Forage Caps." Guess we will have to take out a copyright soon, Hi!

Well, well, when you chaps read this it will be 1944, so first of all A Happy New Year to all of you hams VK, Ws and all the rest, and may this time next year find us dusting off the old rig for a little bit of surely nobody said... "pirating" !!! Oh well, see you on 7 or 14 mc. Hi!

Had a letter from VK4RF after he had made a couple of tours up where the yanks are pretty busy, and as usual he finds some notes to fill up the page.

"VK4EL sends in the following via 4RF...RB is acting Foreman at National Station 4QN, near Townsville. 4WK, 4AN, 4LW, 4HC, 3IV, and 5IV are also working in National Stations in Qld. 4EL cycled over 25 miles to see his old Pal 4RF, chewed the rag till midnight and then rode back all that way without a light. If that isn't the true Ham Spirit, what is???

Met W9YRL at 4CA Cairns recently and had a good yarn in 4CA's Studio...hope none of it went over the air, Hi!...3RY's brother and 2ACU's brother now help 4RF out on the "Manoora". "Truly this Ham Spirit is a contagious disease, Hi. (2YC)." VK2CT at present "war up north" and we wish him the best of luck....he'll need it....

As for 4RF well, he's on 14 days leave with the yf and baby daughter in VIB, and inbetween times he looks at the nice lot of gear he is gradually acquiring. The boys on the ship swear blind that they heard morse coming out of his suitcase when he was carrying down the gangplank on shore leave...." Pretty good Fred, om, even for you. Hi. 2YC.

VK2AKA, VK2AKA, VK2AKA de VK3AH....anybody knowing where 2AKA is, please advise via 2XC or direct to 3AH P/O A. Miller Group 599 RAAF Mascot.

Flying Officer Gordon Bridgen 2ACT was one of those early birds of the Empire Air Training Scheme, starting as an AC2 and taking the long road to a Commission. He graduated in Canada and first served in Bomber Command, then saw service in the Middle East and now is one of forgotten men of the R.A.A.F. in India.

2AMS F/o Keith Avery recently joined the happy band of Benedicts, taking for his bride a Queensland girl. All the best for the future, om.

Captain Fred Carruthers 2PF is the proud father of another baby daughter. I believe the Acting C.S.O may be seen sometimes, these days gutting round the house in an apron, looking after the "B" Beans.

2AMQ Jim Haining fought a fight with a tank coil and came off second best...reckons that the first 1500 are the worst. Hi.

2UX, an ex VK2 President is wandering round VIC on "leave". He is a ball of muscle now he no longer carries all those gallstones around.

Ray Jones of 3RJ still sits in his office or RAAF Eastern Area and keeps a watchful eye on his many WAFF's. But the place is very efficient I am told, and PMG ideas can be seen around the place. Hi. He will be a good NS Welshman when he gets back to Box Hill.

Dear, of dear...more trouble. Hi! What I want is three liason officers, one for each of the Services, and then I will not (perhaps) make so many mistakes???? Poor old Jim Kerley, a Petty Officer way up in Darwin and a post master of sorts (I trust better than I) and yet I put him in the RANVR when it should be the RANR. Now I ask you isn't V for Victim Valour and Victory, so what more does he want. Hi! Jim, anybody sending me news can't escape being the first. Hi! Oh, well lost he send no more notes, I must humbly apologise on behalf of the Editor, (who should have known better). The lad seems to have had his share of the fun, just listen to this. During the past four and a quarter years he has visited North Borneo, Hong Kong, Yokohama, Singapore, Cocos Is., Mauritius, Capetown, Freetown, United Kingdom, Canada, U.S.A., Honolulu, Pago Pago, Fiji, NZ., and back home. In Hong Kong he picked up a nine tube Haalcrafters Communication Revr for the equivalent of £13/10/-. He had it working for two years aboard ship and it still functions OK. On reaching the United Kingdom the first chap met was a ham from Hull G2FL (?). He was a Customs Officer and being imbued with the right Ham Spirit, it was no trouble to get permission to take the above revr on shore during the five weeks leave. Harry White 3IR. Ken Allon 3UH and Cedric Marley, a VK4 were also on Jim's ship. The Northern Ireland section of the RSGB & its members gave the boys a marvellous time and their stay in Belfast was something to remember.

His trips ended with a voyage as a 1st class passenger guest of the Matson Company, just judging his return to Sydney to arrive the day the Japs entered the war...and now he sells stamps in Darwin... have you "retired" Jim?

And here's another complaint, this time about the Melbourne weather...and by a VK3 too....It appears that 3XZ's leave day usually falls on a Tuesday...XZ's complaint is that for the last 13 Tuesday's it been wet...and he's trying to build himself a garden. Mac is now wearing three stripes.

It is with much regret that we announce the passing from these pages one Harry White 3IR...after many many weary months of trying he has at last succeeded in obtaining his discharge from the Navy... reasons.....Medical?????????????????

3MV has been located in VIM. According to Jack its a very monotonous job guarding convoys....He still thinks that the Navy should head these pages...but as it was pointed out to him that the Navy was a Silent Service there was no need for them to be represented.

Happy New Year QMs and don't forget 1300GMT "when the dust comes off." Hi.....2XC

D I V I S I O N A L N O T E S

- NEW SOUTH WALES DIVISION -

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The December General Meeting of the Institute was held at Y.M.C.A. Buildings on Thursday 16th December. It had been decided previously that this Meeting would take the form of a Social Gathering and formal business would be disposed of promptly. The night was an outstanding success due entirely to the efforts of Russ Miller who assumed charge of the catering arrangements. Although this was our first attempt at making the Christmas Meeting a festive occasion it goes without saying that it won't be the last. Russ was more than worthy of the very hearty vote of thanks accorded him at the conclusion. 3RJ's contribution was very much appreciated and I'm very sorry more of those present couldn't have participated!

Members were informed that £4/0/6 was on hand for the A.C.F. "Adopt a Soldier" Scheme and that if £1/3/6 could be obtained another two Servicemen could be added to the number already being provided for by the Division. This amount was forthcoming in a very short time and VK2 is now helping to support 8 Servicemen.

An interesting visitor was W3DOT Frank Hogan who expressed surprise at the amount of interest taken and enthusiasm shown in Experimental Radio as evidenced by the Meeting. He felt that he was quite sure in saying that nowhere else in the world today was interest so keen. Coming from a Yank, that statement is worth noting.

A very welcome visitor was Ft. Lt. Goren VK2UX who prior to joining the R.A.A.F. was Divisional Chairman. In a few well chosen words he congratulated the Executive on the splendid work they were doing and stated that the Institute was held in high regard by Servicemen everywhere.

At the conclusion of General Business the meeting was given over to the most interesting part of the night's proceedings namely "Eat's" and reminiscences of the "good old days." Qsl's were passed round and autographs and "Post War Re-Construction" was the subject of many hams present.

The next Meeting of the Division will be held on Thursday 20th. January and all Amateurs are invited to be present.

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EMERGENCY COMMUNICATION NETWORK

.. Sydney Raided by "Hostile" Planes ..

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"State Operational Control calling Deputy Controller, Wireless. Air Raid Warning, Yellow. Time 9.02 a.m. Please repeat."

This brief telephone message on Sunday 12th December intimated that State Control had received a message from Fortress Command that

suspicious aircraft thought to be of enemy origin had been sighted and therefore it became necessary to warn key personnel.

At 9.15 a.m the wirens (?) sounded the "Alert" and this was the signal for all E.C.N. personnel to man their stations in the shortest possible time. The first station to be manned was VL2JE only thirteen minutes after the "sounding" of the siren. JL was quickly followed by JJ, JK, JC, JE and JP in that order.

At 9.30 a.m. the "Raiders" struck. Coming in two waves, the first over Rose Bay and the second from a more northerly direction, they pressed home the attack with a suicidal frenzy and despite heavy fighter opposition and ack-ack fire quite a few bombers - who were carrier borne - managed to reach the targets.

At 10.06 a.m VL2JC had the honor of transmitting the first message since the Network has been actively associated with the N.E.S. This message - a routine report of Casualty allocations made history for Amateur Radio in Australia, or perhaps in the world. Since the outbreak of war, many countries, particularly within the British Empire, have tried to interest the powers that be in Radio for Civilian Defence. However, other than the U.S.A., Australia is the only country that has succeeded. The lads associated with VL2JC - Gordon Cole 2DI, Eric Fugh 2ADK, Phil Cox, 2IE and Bill Dukes 2WD have done an excellent job. They did not have an easier passage getting the station going, but by dint of hard work, adaptability and a few good Australian words at times, their efforts were at last crowned with success and no operator will begrudge them the honor.

To continue the story. From 10.06 a.m routine casualty reports from the various stations kept coming in until about 11.00 a.m the hospitals attached to the various Ambulance Controls were overcrowded and it became necessary to ask for assistance. Between 11.09 a.m and 11.51 a.m no less than 29 messages were handled!

Eventually the "Raiders" were driven off. Only five planes out of fifty succeeded in eluding the fighters and ack-ack fire, and at 12.31 p.m the "All Clear" was sounded and operators permitted to close down their stations.

In retrospect the Exercise was an outstanding success as far as reliable and efficient Radio Communication was concerned. In all, 82 messages were handled between 9.38 a.m. and 12.32 p.m, each message is checked back by the receiving station as well. 50 Service messages were handled between 10.06 a.m and 12.17 p.m with the real blitz between 11.09 and 11.51 and during that period Control was in constant operation.

During early discussions with N.E.S. that Department asked for a maximum of 20 messages per hour and then revised this number

and asked for 16. The message handling rate on Sunday 12th December was forty per hour!

Both the Director and State Operational Controller, W.E.S. have expressed satisfaction with the manner in which the Network functioned. The next Exercise will be held early in the New Year and this will be a Test for Communications and it can be stated with certainty that the Network will have a much bigger job to do.

No Message Handling Competitions have been held during the last two months, but these will commence during the first week of January, when it is anticipated that-believe it or not - the Auxiliary Power Supplies will be available.

VL2JC...Did an excellent job, but we've had quite a lot to say about them previously.

VL2JE...Decided to stay on the same frequency much to the relief of those at VL2JB. It is understood that the VL telephone operator was quite fb. Remember chaps, when you have comments to make, forget the kindergarten stuff.

VL2JJ...Could not be faulted. Nuff said!. By the way Arthur, what is the octane rating of that motor spirit you used!

VL2JK...Also did a good job. Ken Davidson and Charlie Chenhall will make a couple good hams when it's all over. 2EH is very fortunate in having such assistants. Hope the new one will be as good.

VL2JL...Oh where, oh where has my puppy dog gone? I mean, where were the gang between 9.28 a.m and 10.10 a.m. Spoilt a great performance. Was it the VL's in the D.A.C. George?

VL2JP...Did a good job, but unfortunately did not have much traffic to handle. Got a bit worried about 10.30 when they were finger-printing about six girls from the Home. Too bad these boys are all young married men. Better luck next time, "Shorty."

VL2JB...Congratulations to the operators at Control, particularly Len Burton, who although not yet a ham, handled traffic like a veteran and refused to get ruffled when things were hot. There is absolutely no truth in the rumor that Charlie Frerar bought the Sundial in the Gardens in an endeavor to learn to tell the time!

.....XXX.....

V I C T O R I A N D I V I S I O N

.. HAMS! WHAT DO YOU EXPECT OF POST WAR HAM RADIO? ..

It's not too early to start planning for the future, and every Ham will want to have a say as to what should be done when our licences are restored. The Council of this division has therefore decided that the March 1944 meeting be devoted to a full, open and frank discussion of ideas on all phases likely to affect the future of Ham Radio in Australia.

We invite all those interested who are in Melbourne of the 7th of March 1944 to attend and EXPRESS THEIR VIEWS, and those who are away from home, particularly men in the services, to let us have their views in writing so that we can read them to the meeting.

As an act of Federal Parliament is needed before Hams can operate again in this country, and remembering that Hams were suffering more and more restrictions with each International Convention, it is not hard to believe that strong reasons will have to be put forward to back up our claims for restoration of our licences.

We believe that this discussion, which may extend over two or three meeting nights, will lay the foundation of any scheme that may be devised to support our claims. So please remember the date..
...TUESDAY, 7th MARCH, 1944....and bring or write your ideas.

Readers are reminded that these meetings are not restricted to members only....anyone interested in Radio or associate industries are always cordially welcomed to meetings.

It is with much pleasure that we welcome back to this page Harry White 3IR. After serving for some years with the navy, it must be a change to get back into civies....For everyone's information, Harry is now to be located keeping 3XY's transmitter on the air. Someone whispered something about a XL...I don't know whether or not it's really an XL????

The matter of the Licencing of Radio Servicemen occupied considerable time at the last meeting. As it has been announced in the papers that this scheme is to come into effect in the near future, and as yet the position of Amateurs in this State has not yet been clarified, it was decided to write to the WOI in this State asking them to clarify the position of the Hams.

We are pleased to welcome as new members of this Division Captain E. Foster of LBE heavy Wireless Group, and Mr. Richardson.

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THE WIRELESS INSTITUTE OF AUSTRALIA



Divisions of the Wireless Institute of Australia exist in every State of the Commonwealth. The activities of these Divisions are co-ordinated by Federal Headquarters Division, the location of which is determined from time to time by ballot.

Present location of F.H.Q. :— New South Wales

Federal President : F. P. DICKSON, VK2AFB.

Vice-President : H. F. PETERSON, VK2HP. **Federal Secretary :** W. G. RYAN, VK2TI.

Councillors : C. FRYAR, VK2NP ; W. J. McELREA, VK2UV

Official Organ : "AMATEUR RADIO"—Published by the Victorian Division.

VICTORIAN DIVISION

191 QUEEN ST., MELBOURNE

Postal Address : Box 2611W, G.P.O.

President : H. N. STEVENS, VK3JO

Secretary : R. A. C. ANDERSON, VK3WY

Treasurer : J. G. MARSLAND, VK3NY

Councillors : I. MORGAN, VK3DH; T. D. HOGAN, VK3HX; R. J. MARRIOTT, VK3SI; C. QUIN, VK3WQ; A. H. CLYNE, VK3VX; H. BURDEKIN; K. RIDGWAY.

Subscription Rates

Metropolitan	£1 per annum
Country	14/6 per annum
Defence Forces	7/6 per annum

Subscription includes "AMATEUR RADIO"

Meeting Night

**First Tuesday in each month at W.I.A. Rooms,
191 Queen Street.**

Visiting Overseas and Interstate Amateurs are welcome at meetings and they are invited to communicate with the Membership Secretaries :

T. D. HOGAN .. VK3HX - UM1732

J. G. MARSLAND VK3NY - WF3958

WESTERN AUST. DIVISION

C.M.L. Buildings,

ST. GEORGE'S TERRACE, PERTH

Postal Address : BOX N1002, G.P.O. PERTH.

Secretary : C. QUIN, VK6CX.

NEW SOUTH WALES DIVISION

Registered Office :

21 TUNSTALL AV., KINGSFORD

Telephone : FX3305

Postal Address : Box 1734JJ, G.P.O., Sydney

Meeting Place

Y.M.C.A. BUILDINGS, PITT ST., SYDNEY

President : R. A. PRIDDLE, VK2RA

Vice-Presidents : H. F. PETERSON, VK2HP ;
E. HODGKINS, VK2EH.

Secretary : W. G. RYAN, VK2TI

Treasurer : W. J. McELREA, VK2UV.

Councillors : N. GOUGH, VK2NG; E. TREHARNE,
VK2AFQ; P. DICKSON, VK2AFB; C. FRYAR, VK2NP;
R. MILLER

Subscription Rates

Full Members	10/6 per annum
Service Members	7/6 per annum

The N.S.W. Division meets on the third Thursday of each month at Y.M.C.A. Buildings, Pitt St., Sydney and on invitation is accorded to all Amateurs to attend. Overseas and Interstate Amateurs who are unable to attend are asked to phone the Secretary at FX3305.

QUEENSLAND DIVISION

Box 1524V, BRISBANE

SOUTH AUSTRALIAN DIVISION

Box 284D, ADELAIDE

TASMANIAN DIVISION

BOX 547E, HOBART